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Determinants of Household Expenditure on Education in Cambodia: Focusing on Children of Disadvantaged Backgrounds

Sokpanya Phon*
Graduate School of International Cooperation Studies, Kobe University, Japan

Abstract
This paper provides empirical evidence on the spending behaviors of households with children with disabilities and households from ethnic minority backgrounds on investment in their children's education in Cambodia. These groups are found to be even more vulnerable than girls in terms of access to educational services. Employing the nationally-representative Cambodian Socio-Economic Survey 2012, the study uses the tobit model. Results showed that urban location, income and parental education have a positive and significant effect on family's expenditure on education. These effects increased with an increase in grade levels. Education spending on education for children with disabilities and for children among ethnic minority groups was far lower.
Keywords: Household expenditure, Disadvantaged backgrounds, Tobit

1. Introduction

The concept of public subsidy is justified by arguments for greater social benefits (Majumdar, 1983) and for the notions of promoting equity and efficiency (UNESCO, 2009b). With the support services provided by the government through equitable public resource allocation, this ideal would be an effective mechanism for those marginalized groups to fully exercise their right to education. This also serves as a means to address and respond to the diversity of needs of everyone in a fair and inclusive community and to reduce and eliminate exclusion within and from education (UNESCO, 2009a). The Cambodian government has increased the public spending on education as a share of GDP by doubling it from 0.9% in 1997 to 1.5% in 2006 (Benveniste, et, al., 2008) to assure the right to education for all children including disadvantage groups (hereafter in this study, children with disabilities (CWDs) and students from ethnic minorities.

Although an emphasis on free education in Cambodia and on reducing household costs to zero percent by 2015 has been highlighted in the government's policies, the public provision of education services is not always unlimited, especially in low-income countries, as such Cambodia, whose government is incapable of allocating adequate public resources (Bray & Seng, 2005; Bray, 2007a; UNESCO, 2011). During the period of 2007-2012, average public educational expenditure in Cambodia accounted for 12.4 percent, a low share relative to that of other countries in the Southeast Asian and Pacific regions, and the spending per student in primary school as a percentage of GDP per capita was also amongst the lowest in the regions (Tandon & Fukao, 2014). Since 2007, the public spending on education's recurrent budget has also declined gradually (Tandon & Fukao, 2014). Households have to shoulder sharing responsibilities for some direct costs such as uniforms, books, and study related items (Bray, 2007a; Kattan & Burnett, 2004; Keng, 2009; Tsang, 1994). According to the World Bank (2011), household outlays on education in Cambodia in 2009 accounted for 2.5% of GDP, the same amount as spent by the government during the time.

The situations of the two groups, including children with disabilities and students belonging to ethnic minority groups, share a similar faith in receiving education. The school participation of those children are hampered basically due to poverty, lack of belief in the value of education which is relevant and related to their future success and which their families cast doubt upon the benefits they would accrue from returns in the labor market (Mong & Cuong, 2011; Trang, 2013). Bearing those perceptions can in turn affect their long-term earnings. The study on poverty, disability and schooling in developing countries, one of which is Cambodia, clearly shows the school enrollment gap between children with and without disabilities to be twice as high as the gap associated with rural residence, wealth and gender (Filmer, 2005).

Glewwe & Jacoby (2004) and Pushkar (2003) discuss the fact that to promote human capital development, it is less successful to simply focus on improving systemic educational problem from the supply side policies in developing countries. It is, therefore, worth taking a closer look at behaviors and attitude from the demand side and particularly scrutinizing what motivate households in Cambodia in distributing the allocation of household resources so that policies can be properly targeted. In addition, the empirical results from this study will also be able to provide clearer images of the disparity of treatment towards disadvantage groups, namely children with disabilities and ethnic minority groups.

In this paper, it aims to investigate the determinants of household expenditures on education in Cambodia. More specifically, it explores how households behave towards children with disabilities compared with children without disabilities, and how ethnic minority household spend on their children's education compared with the majority ethnic households.

Studies on household expenditure on education have been explored in various objectives with either

descriptive analysis or different econometric models in both specific country context and comparative analysis (Andreou, 2012; Donkoh & Amikuzuno, 2011; Foko et al., 2012; Glick & Sahn, 2000; Kattan & Burnett, 2004; Masterson, 2012; Mehrotra & Delamonica, 1998; Saha, 2013). Surprisingly, little is known about the effect of household expenditure on education sheering the focus on the disadvantaged groups. As the spending might be different among the two disadvantaged groups, this study contributes to the literature by embracing these two factors in the analysis.

The research on household financing on education in Cambodia has been carried out twice on a large scale with large sample sizes by Bray (1999) and Bray & Seng (2005). The latter study aimed to extend and compare the costs with the earlier research. The studies reveal specifically the types of costs and amounts borne by households (Bray & Seng, 2005; Bray, 1999) from grade 1 to grade 9, to complement the under-funding and under-resourcing in the public education system, even at the lowest level of education (Ayres, 2003). While Bray (1999) points out the significance of household spending on education, which can help stimulate the quality of education, he also claims the negative perspectives arising from inequitable educational opportunities. Parents might need to decide to stop children from attending schools when facing with financial difficulties or when the amount of cost increases as children progress grade by grade. In other words, household income in Cambodia does have a strong impact on spending on children's education.

The empirical study on determinants of household outlays on education in Cambodia, however, has received little attention from researchers, let alone the related study focusing on disadvantaged groups. The study examining the determinants of individual and household influencing the decision-making on schooling of grade 4 students in two rural villages of one province in Cambodia by Keng (2004) is an exception. Using two indicators, the size of farmland and number of cattle[1] owned, as proxies for household economic status, he found a significant association between the size of farmland and the high probabilities of children remaining in school beyond grade 4. However, when taking number of cattle into account, he did not find any significant relationship. It can be inferred children from a family who owns many cattle may not be enrolled or drop out to look after cattle. Simply put, their situation is not dissimilar from children from a family who owns few or no cattle, but who are too poor to pay for the cost of education. Therefore, he suggests that the evidence is too ambiguous to conclude that economic resources are exclusive determinants of children's education participation in Cambodia.

This paper proceeds as follows. Section 2 reviews previous study carried out on the factors influencing household's financing on children's education. Section 3 provides a theoretical framework and followed by a discussion of the empirical model used in the study. Section 5 describes the data and summary statistics. Section 6 presents study's results, and followed by a discussion and conclusion.

2. Literature Review

Household income is connected with the magnitude of household spending on education, which means an increase in income also implies the increasing willingness to spend on education (Andreou, 2012; Glewwe & Patrinos, 1999; Huy, 2012; Kanellopoulos & Psacharopoulos, 1997; Omori, 2010; Qian & Smyth, 2011; Saha, 2013). Given the importance of the relation between household income and child schooling, it can minimize intergenerational social mobility and help mitigate social equity in terms of schooling opportunities (Behrman & Knowles, 1999). As discussed by Deaton (1997), the growth of income can have positive correlation with the higher demand of consumption, education in this case.

Andreou (2012) investigated the household expenditure on education in Cyprus in three distinguished years (1996/97; 2002/03; & 2008/09) and found that educational spending increases by all three set periods in his analysis, which suggests that as years pass by with the growth of income, the spending also increases. Similarly, Glewwe & Jacoby (2004) in Vietnam utilizing household panel data from 1993 – 1998 on the relation between the change of household resources and demand for education, demonstrates that the change of household wealth alone really makes a significant impact on school enrollment, of about 10.3% for children age 10 – 18 over the 1993 – 1998 period. In other words, the growth of participating in education is attributable to the change of income rather than the benefits individuals would think of from the rate of return to education.

It would be commonly perceived that when parents' education level is high, it is more likely they will expect the same achievements from their family members. Simply put, educated parents tend to appreciate their children's education, and the higher the level of the parents' education, the more their appreciation is intensified, resulting in a positive effect on educational expenditure (Glewwe & Patrinos, 1999; Huy, 2012; Kanellopoulos & Psacharopoulos, 1997; Omori, 2010; Saha, 2013). It should be noted that although Glewwe & Patrinos (1999) argues the parental education is likely to increase the chance of children to attend school, they assert that at the primary school level, mother's and father's schooling has a small positive impact on school expenditures, in terms of per capita expenditure. When looking at gender of household head, whether male or female, attitudes on

[1] In Cambodia, land and cattle are considered to be the very important assets for rural farmers, and they can imply the economic status. In addition, cows are widely used on the farmland in traditional farming methods to generate agricultural yields (Keng, 2004).

educational outlay tend to affect decisions differently. In Ghana, the study is found that female heads tend to spend more on investing in their children's education (Donkoh & Amikuzuno, 2011). This shows that improving the educational levels of mothers has a bigger impact upon children than that of fathers. Interestingly, Andreou (2012) concludes from his finding that the head's education, regardless of household head gender, plays less and less important role in determining the willingness of household spending on education, as it appears to diminish over periods of time.

The high rise and a competitive life of living in urban areas and giving a concern of children's earning capacity is a normal reason that stimulates parents to invest in education for their children. Studies also show that the higher levels of education children are engaged in, the higher amount the households have to spend for their children's education (Tilak, 2002). For this notion, the study on educational expansion in urban areas and expenditure in equality in Indonesia signifies that the inequality of the living standard and the conspicuous disparity of income among households living in urban areas is also increasing compared to rural areas (Akita & Miyata, 2008).

Demographically, household size and the number of children in a household also matter as more children in school mean more expenditure, bringing about a negative impact on educational spending. The results at the household level are found in a Ghana study that the greater the number of children of school-aged children going to school, the greater the probabilities of household spending on education (Donkoh & Amikuzuno, 2011). Using Vietnam Living Standard Survey in 1992-1993, Glewwe & Patrinos (1999), however, claims household size has a small role to play when controlling for income level and parental education. In addition, children's level of education along with age yield directly impacts on the amount spent by the households (Tilak, 2002). On the contrary, Qian & Smith (2011) could not detect any relationship between number of school-aged groups in households and education expenditures among primary students, although he signifies the positive correlation between the number of secondary-aged children in the households and expenditure on education in secondary school students

The educational opportunity for children from ethnic minority households is found to be inferior and face with numerous challenges such as impoverishment and inadequate formal condition of formal schooling, making them vulnerable to having their education. Trang (2013) suggests that household belief of education and the casting doubts on the function of education that will help their children to escape from hunger and to get out of poverty is obscure among those people. In many cases, when parents decide to invest in education for their children, they are commonly biased in favor of sending non-disabled children rather than disabled children. In the study of 14 developing countries using varieties of surveys by (Filmer, 2008), the gap of school enrollment of CWDs is more double than the issue of gender and other socio-economic characteristics. Lamichhane & Sawada (2013) affirms that families who are financially constraint are not willing to invest in education for children with disabilities. The study also reveals that it is the characteristics of disabilities itself that limit educational opportunities for those CWDs (Lamichhane & Sawada, 2013).

3. Theoretical Framework

The concept of investment in human capital, pioneered by Mincer (1974) emphasizes the rates of returns to education to a society and individuals. Firstly, education is a key driving factor in economic development as individuals become part of the collective social and human capital through gaining knowledge, skills, and creativity, increasing a country's productivity and in turn contributing to poverty alleviation. Secondly, from a micro perspective, focusing on an individual's future returns in schooling, education is viewed as a fundamental investment that can enhance an individual's social and economic status through income prospects and improving standards of living.

Nonetheless, the actual practice, particularly in developing countries, is, nonetheless, restricted by household income and the high costs, in terms of both education-related costs and high opportunity cost[1] (de Brauw & Giles, 2006). This could pose a threat to the opportunities of children, including the possibility of keeping them in school and to complete at least a basic education as endorsed in the educational policy[2] (Glewwe & Jacoby, 2004; Glewwe & Patrinos, 1999). According to Tsang (1994), he categorizes educational cost analysis to several types of costs, including direct and indirect. Among those costs, two main types presumably to be important are direct private cost (representing direct outlay borne by participants and their families) and direct public cost (representing direct costs borne by the government).

This study will capture the direct private costs on education by households investing in children's human capital formation, since the decision in most cases is made by households. In addition, by incorporating an econometric framework adapted from Huy (2012) and Qian & Smith (2011), household expenditure on

[1] Opportunity cost, also known as indirect cost is found to be more critical and the major burden for some households in making a decision to send children to school. Those students are perceived to be able to help contribute to the either household economy by working for income, working in farming or household responsibilities such as collecting water and firewood, looking after younger children or the elderly.
[2] Talk about education policy related to completion of basic education

education is seen as the effects of variables derived from household and individual characteristics. In short, this study takes the individual level as the unit of analysis, treating the incidence of an individual's expenditure on education as the result of a combination of household and individual characteristics.

4. Methodology

This study follows Huy (2012) and Qian & Smith (2011) by employing the tobit approach to examine the factors influencing household expenditure on education. Tobit estimation is preferable when a considerable amount of dependent variable's values is clustered at a specific threshold at left side and/or right side. In this study, it treats the educational expenditure of school-aged children who are not enrolled in school system at the time of survey recorded as zero spending and about 20% of those observations are left-censored at zero. In such a situation, linear OLS estimation would possibly yield negative fitted values, resulting in a negative prediction of the dependent variable, education expenditure in the case of this study (Wooldridge, 2013).

The education expenditure on an individual child (dependent variable), the annual spending of households on children's education, is transformed into the logarithmic forms to reduce outlier observations for a more efficient estimation. In the meantime, the logarithmic transformation can trigger off a problem of households who have zero expense on education. A value of one is then added in place of zero educational expenditure to give the value for the zero logarithms. Finally, logged annual household expenditure on education is regressed on the various household and individual characteristics defined in Figure 1 of the analytical framework.

First, the model is estimated for the full sample taking the two aforementioned characteristics as independent variables. Second, the full sample is divided into educational levels corresponding to school-aged students in order to examine at each educational level the effects on the household expenditure patterns on education. The econometric model of tobit can be expressed as:

$$y_i^* = X_i'\beta_i + \varepsilon_i \qquad (1)$$

$$y_i = 0 \; if \; y_i^* \leq 0 \quad and \quad y_i = y_i^* \; if \; y_i^* > 0$$

Where X_i is the vector of individual and family of student *i* and y_i^* is the latent unobserved continuous variables.

5. Data

The study uses the nationally representative Cambodia Socio-Economic Survey (CSES) 2012 data set for the analysis. CSES 2012 collected data from 3840 households consisting of 17, 644 individuals. CSES gives detailed information on a wide range of topics including information about expenditure of each individual of the household members and other household characteristics. In CSES 2012, household yearly expenditure on education is reported at the individual level with the subcategories of 1) school fee; 2) tuition; 3) textbooks; 4) other school related supplies; 5) allowance for children studying away from home; and 6) school building fund. Educational expenditure in this study is referred to the aggregated sum of the above expenditures.

In addition, focusing on the disadvantaged groups, the classification of CSES 2012 in regard to people with disabilities is divided into 8 types including (1) Seeing difficulties or visual impairment, (2) Hearing difficulties or hearing impairment, (3) Speaking difficulties or mute/speaking impairment, (4) Moving difficulties or physical impairment, (5) Feeling difficulties, (6) Abnormal behavior or mental impairment, (7) Learning difficulties or intellectual impairment, and (8) Fits. Due to the small observations of CWDs, all of these 8 categories will be wholly combined and treated as children with disabilities (CWDs). Likewise, minority groups, referring to several groups such as Cham (Khmer-Islam), Chinese, Vietnamese and local ethnic minorities (hill tribes mostly in the Northern area) will be merged into one group and analyzed to see the different magnitude between the groups compared to the majority Khmer[1].

In this study, for the educational expenditure, only individuals aged between 6 and 17 years old are selected for the analysis. After dropping the unnecessary observations, the sample size reduces to 4295. (Table 1).

[1] Khmer represents the majority of the Cambodian people, accounting for about 96% in the CSES (see Table 1).

Table 1: Summary Statistics

Variables	Obs.	Mean	Std. Dev.	Min	Max
Log Education Expenditure	4295	9.870	5.212	0	15.92
Age 12-14	4295	0.251	0.433	0	1
Age 15-17	4295	0.251	0.433	0	1
Male	4295	0.500	0.500	0	1
Disability	4295	0.012	0.107	0	1
Non Khmer	4295	0.035	0.185	0	1
Household Head Male	4295	0.836	0.371	0	1
Father Education					
- Primary	4295	0.390	0.488	0	1
- Lower Secondary	4295	0.205	0.404	0	1
- Upper and above	4295	0.152	0.359	0	1
Mother Education					
- Primary	4295	0.514	0.500	0	1
- Lower Secondary	4295	0.146	0.354	0	1
- Upper and above	4295	0.064	0.245	0	1
Household Size	4295	5.685	1.794	2	15
Age 0-5 Ratio	4295	7.695	10.682	0	50
Age 6-17 Ratio	4295	41.734	14.802	8.33	80
Age 22-55 Ratio	4295	38.510	13.304	0	87.5
log expenditure	4295	12.164	0.513	10.50	14.51
Urban Area	4295	0.322	0.467	0	1

Source: Created by the author based on CSES 2012

6. Results

This section reports the results obtained from the tobit estimations. The results will explain factors influencing household spending on education and how disadvantaged groups, including CWDs and students from ethnic minority households, have an impact on the pattern of spending on education and separately reveal how those predictors influence the spending on education by levels of education pertaining to school-aged cohorts.

6.1. Household Expenditure on Education.

The tobit marginal effect are calculated and reported in Table 3. The results, as of the whole sample (column 1), indicate that on average, age, household size, father and mother education levels, household's income, proxied as log of expenditure per capita, and households in urban areas are positively associated with spending on education. Students being male and household head being male are not necessarily associated with educational spending, as these factors are not statistically different from zero. In terms of students' educational level corresponding with age cohort, the spending on students in lower secondary schools is 81 % higher than that on students in primary school, statistically significant at 1% level.

6.2. Educational Spending among Households with Children with Disabilities and Ethnic Household Minorities

In regard to disadvantaged groups, it shows that households are less likely to pay for their education. Households who have children with disabilities spend far less than their non-disabled peers' families and the magnitude increases along with children's age, especially among primary and secondary school-aged children. However, there is no significant effect of educational spending on upper-secondary-aged children. Similarly, students from ethnic minority groups are significantly associated with lower educational expenditure paid by their households. Specifically, they are paid 97% less than those who are originally from Khmer families. The older they become, the less the households are willing to spend for their education.

6.3. Household Expenditure on Education by Educational Levels.

In the same Table 2 of the marginal effects for the tobit estimates for household educational spending are illustrated by educational levels of students' age cohorts reported in column (2), (3), and (4). As expected and supporting the hypothesis 1.2, it can be clearly seen that income and area where students reside have very strong impacts on spending on education in all age cohorts, namely representing primary, lower and upper secondary schools. The higher the grade students achieve, the more costs the households bear, accounting for 1.5%, 2% and 2.5% in the three educational levels respectively. Although students from households living in urban areas incur greater expenditure than their rural counterparts on education, specifically for the first two education levels, this

is not statistically significant for the upper secondary school. In other words, the spending for upper-secondary student age cohort for both rural and urban households is not different.

Household head being male or children being male do not have any significant impact on educational expenditure for their children. Simply put, gender of household head has no correlation with spending, and once households decide to invest in their children's education, there is neither child preference nor gender bias present. In terms of parental education, the results suggest that overall, a mother's education has more impact on spending on education for children than the father's, specifically in spending on primary school children. This trend can be explained through the higher coefficients and the significant level at 1% in all educational levels of mothers' education. The trend of fathers' impact, however, appears to reverse and is positively significant when fathers are at least lower-secondary-educated and when educational expenditure is paid for the school-aged children in the lower and upper secondary schools. The results infer that the higher the education of the parents, the greater the impact there is from father's education upon spending in the two respective educational levels.

Table 2. Tobit's Marginal Effects for Household Expenditure on Education

VARIABLES	Marginal Effects			
	(1)	(2)	(3)	(4)
	All	Age6-11	Age12-14 (3)	Age15-17
Individual Characteristics				
Age 12-14	0.811***			
	(0.179)			
Age 15-17	-3.277***			
	(0.189)			
Male	0.056	-0.004	-0.344	0.435
	(0.145)	(0.196)	(0.242)	(0.303)
Disability	-4.327***	-5.798***	-5.291***	-0.726
	(0.715)	(1.004)	(1.072)	(1.536)
Non Khmer	-0.971**	-1.634***	-0.395	-0.011
	(0.408)	(0.576)	(0.643)	(0.843)
Household Characteristics				
Household Head male	-0.071	-0.066	-0.586	-0.104
	(0.252)	(0.338)	(0.419)	(0.573)
Father Education				
- Primary	0.151	0.027	0.159	0.519
	(0.235)	(0.306)	(0.398)	(0.554)
- Lower Secondary	0.886***	0.268	1.242***	1.845***
	(0.267)	(0.357)	(0.441)	(0.599)
- Upper and above	0.878***	-0.037	0.987*	2.351***
	(0.311)	(0.423)	(0.516)	(0.669)
Mother Education				
- Primary	0.688***	0.691***	0.905***	0.613
	(0.186)	(0.248)	(0.313)	(0.404)
- Lower Secondary	1.159***	0.999***	0.874**	1.443***
	(0.262)	(0.357)	(0.444)	(0.533)
- Upper and above	1.165***	1.333***	0.886	1.259*
	(0.367)	(0.509)	(0.600)	(0.740)
Household Size	0.102**	0.124**	0.107	0.065
	(0.045)	(0.062)	(0.078)	(0.095)
Age 0-5 Ratio	-0.017**	-0.016**	-0.000	-0.046**
	(0.008)	(0.010)	(0.0149)	(0.021)
Age 6-17 Ratio	-0.010*	-0.011*	-0.007	-0.010
	(0.006)	(0.009)	(0.009)	(0.011)
Age 22-55 Ratio	-0.009	-0.011	-0.015	0.000
	(0.006)	(0.009)	(0.011)	(0.011)
Log expenditure	1.998***	1.518***	1.979***	2.450***
	(0.180)	(0.250)	(0.302)	(0.363)
Urban Area	0.631***	0.605**	0.775***	0.486
	(0.177)	(0.244)	(0.295)	(0.361)
Constant				
Left-censored	914	343	111	460
Observations	4,295	2,142	1,076	1,077
Pseudo R2	0.473	0.338	0.422	0.455

Source: Created by the author based on CSES 2012

Note
- Standard errors in parenthesis
- *** p<0.01, ** p<0.05, * p<0.10
- Base group for father and mother education is "No education"

Turning the focus to the focal groups, the disparity of spending on education for disadvantaged children is even more stark. In general, the educational outlay on them is relatively lower than for their counterparts in all

the educational levels. Having one more CWDs reduces the spending in primary and lower secondary education by 580% and 530% respectively. In addition, children from non-Khmer households are less likely to have their education paid for compared to their Khmer counterparts by 163% in the primary education. In the upper secondary schools, though it does not significantly correlate with the spending on disadvantaged groups, the negative sign still exemplifies the lower spending of households on the two groups' education.

7. Conclusion

Investigation of household expenditure on education has drawn much attention for decades and scholars have conducted studies with different focuses on household and individual characteristics. The impacts of the two patterns revealed through those studies in regard to disadvantaged groups have yet to be thoroughly explored. Using the CSES 2012 data, this study examines the determinants of household expenditure on education, specifically to reveal the disparity paying for education for the disadvantaged.

The key main findings of this study are in line with previous studies' results. As to household characteristics, either the analysis of the full sample and by the school-aged cohorts, income has a significant effect on the magnitude of families' expenditure on education and these effects hold and increase in line with the higher-grade levels of the three school-aged cohorts. This income effect shares a similar pattern with the location (students in urban areas) impact, especially in the primary and lower secondary students, which entails the higher status and greater necessity of educational outlay and the importance of private tutoring of students in urban households. Accordingly, the families with more resources and better human capital tend to value more highly education for their children and the tendency is revealed through the fact that the more educated the parents, the more willing they are to invest in children's education. Overall, mother's education is more important for the decision to engage children in private tutoring and to pay for children's education, particularly in primary school-aged cohorts, whereas higher educated fathers have more impact on educational spending for the last two school-aged cohorts. However, this father's education effect does not hold in the case of the probability of a household's decision to send children to private tutoring.

Deaton (1997) suggests that household spending on education is conditioned by demography, and it is confirmed in this study's findings that the more school-aged children the households have, the less cost the households are willing to pay for children's schooling, including their private tutoring. The effect also applies to age cohorts of the three educational levels namely primary, lower secondary and upper secondary education. In regard to individual characteristics, students' gender is not significant in the results, suggesting that there is no gender bias on education spending and the chance of taking private tutoring in Cambodia.

It has been argued that the pattern of educational spending is associated with long-run poverty, as children will be less likely to acquire the human capital which can help enhance their capacity to earn higher incomes (Filmer, 2008), and this study strongly supports the argument. Since the disadvantaged groups and poverty are inextricably linked, it is through education provided to the disadvantaged groups, including children with disabilities and children belonging to ethnic minorities, that the poverty cycle can be broken. Thus, continual efforts must be made to ensure that education as of a basic human right be exercised equally and equitably by targeting and breaking through any barriers from the outset when households start to incur expenses for children's education, as in one of the priority plans set by the Cambodian government in the ESP 2014-2018.

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References

Akita, T., & Miyata, S. (2008), "Urbanization, Educational Expansion, and Expenditure inequality in Indonesia in 1996, 1999, and 2002", *Journal of the Asia Pacific Economy*, *13*(2), 147–167.

Andreou, S. N. (2012), "Analysis of Household Expenditure on Education in Cyprus", *Cyprus Economic Policy Review*, *6*(2), 17–38.

Ayres, D. (2003), "Education and the Localization of Structural Adjustment in Cambodia", In *Globalization and Educational Restructuring in the Asia Pacific Region* (pp. 232–261). New York: Palgrave MacMillan.

Behrman, J. R., & Knowles, J. C. (1999), "Household Income and Child Schooling in Vietnam", *The World Bank Economic Review*, *13*(2), 211–256.

Benveniste, L., Marshall, J., & Araujo, M. C. (2008), "*Teaching in Cambodia",* Phnom Penh: World Bank.

Bray, M. (1999), "*The Private Cost of Public Schooling: Household and Community Financing of Primary*

Education in Cambodia", Paris: IIEP, UNESCO.
Bray, M., & Seng, B. (2005), *Balancing the Books: Household Financing of Basic Education",* Washington, DC: World Bank.
Bray, M. (2007a), "Household financing of basic education. In *Common wealth education patnership* (pp. 160–162)", New Dehli: Nutech Photolithography.
Deaton, A. (1997), "*The analysis of household surveys",* Washington, DC: World Bank.
de Brauw, A., & Giles, J. (2006), "Migrant Opportunity and the Educational Attainment of Youth in Rural China", *Journal of Human Resources*, *52*(1), 272–311.
Donkoh, S. A., & Amikuzuno, J. A. (2011), "The Determinants of Household Education Expenditure in Ghana", *Educational Research and Review*, *6*(8), 570–579.
Filmer, D. (2005), "*Disability, Poverty and Schooling in Developing Countries: Results from 11 Household Surveys",* Washington, DC: World Bank, DC.
Filmer, D. (2008), "Disability, Poverty, and Schooling in Developing Countries: Results from 14 Household surveys. *The World Bank Economic Review*, *22*(1), 141–163.
Foko, B., Tiyab, BK. & Husson, G. (2012), "*Household Education Spending: An Analytical and Comparative Perspective for 15 African countries",* Dakar: UNESCO.
Glewwe, P., & Patrinos, H. A. (1999), "The Role of the Private Sector in Education in Vietnam: Evidence from the Vietnam living standards survey", *World Development*, *27*(5), 887–902.
Glewwe, P., & Jacoby, H. G. (2004), "Economic Growth and the Demand for Education: Is There a Wealth Effect?", *Journal of Development Economics*, *74*(1), 33–51.
Glick, P., & Sahn, D. E. (2000), "Schooling of Girls and Boys in a West African country: The Effects of Parental Education, Income, and Household Structure", *Economics of Education Review*, *19*(1), 63–87.
Huy, V. Q. (2012). "Determinants of Educational Expenditure in Vietnam", *International Journal of Applied Economics*, *9*(1), 59–72.
Kanellopoulos, C., & Psacharopoulos, G. (1997), "Private Educational Expenditure in a Free Education's Country: The Case of Greece", *International Journal of Educational Development*, *17*(1), 73–81.
Kattan, R. B., & Burnett, N. (2004), "*User Fees in Primary Education",* Washington, DC: World Bank.
Keng, C. (2004), "Household Determinants of Schooling Progression", *International Education Journal*, *5*(4), 552–561.
Keng, C. (2009), "Basic Education in Cambodia: Quality and Equity", In *The Political Economy of Educational Reform and Capacity Development in Southeast Asia* (pp. 113–129). Springer Netherlands.
Lamichhane, K., & Sawada, Y. (2013), "Disability and Returns to Education in a Developing Country", *Economics of Education Review*, *37*, 85–94.
Majumdar, T. (1983), "*Investment in Education and Social Choice",* Oxford: Cambridge University Press.
Masterson, T. (2012), "An Empirical Analysis of Gender Bias in Education Spending in Paraguay", *World Development*, *40*(3), 583–593.
Mehrotra, S., & Delamonica, E. (1998), "Household Costs and Public Expenditure on Primary Education in Five Low Income Countries: A Comparative Analysis", *Int. J. Educational Development*, *18*(1), 41–61.
Mincer, J. (1974), "Schooling, Experience and Earnings", New York: National Bureau of Economics Research.
Mong, D., & Cuong, N. (2011), Disability and Poverty in Vietnam", *The World Bank Economic Review*, *25*(2), 323–359.
MoP. (2012), "Cambodia Socio-Economic Survey" Phnom Penh: National Institute of Statistics
Omori, M. (2010), "Household Expenditures on Children 2007–08", *Monthly Labor Review*, (September), 3–16.
Pushkar, M. (2003), "Schooling and Educational Attainment: Evidence from Bangladesh", *Education Economics*, *11*(2), 129–153.
Qian, J. X., & Smyth, R. (2011), "Educational Expenditure in Urban China: Income Effects, Family Characteristics and the Demand for Domestic and Overseas Education", *Applied Economics, 43*(24), 3379–3394.
Saha, A. (2013), "An Assessment of Gender Discrimination in Household Expenditure on Education in India. *Oxford Development Studies*, *41*(2), 220–238.
Tandon, P., & Fukao, T. (2014), "*Teaching the Next Generation: Improving Teaching Quality in Cambodia*", Washington, D.C: World Bank.
Tilak, J. B. G. (2002), "*Elasticity of Household Expenditure on Education in Rural India*", *South Asia Economic Journal 3*(2), 217–226.
Trang, N. T. (2013), "Factors Associated with Low Educational Motivation among Ethnic Minority Students in Vietnam", *Ritsumeikan Journal of Asia Pacific Studies*, *32*, 124–136.
Tsang, M. C. (1994), "*Cost Analysis of Educational Inclusion of Marginalized Populations",* Paris: IIEP, UNESCO.
UNESCO. (2009a), "*Policy guideline on inclusion in education",* Paris: UNESCO.

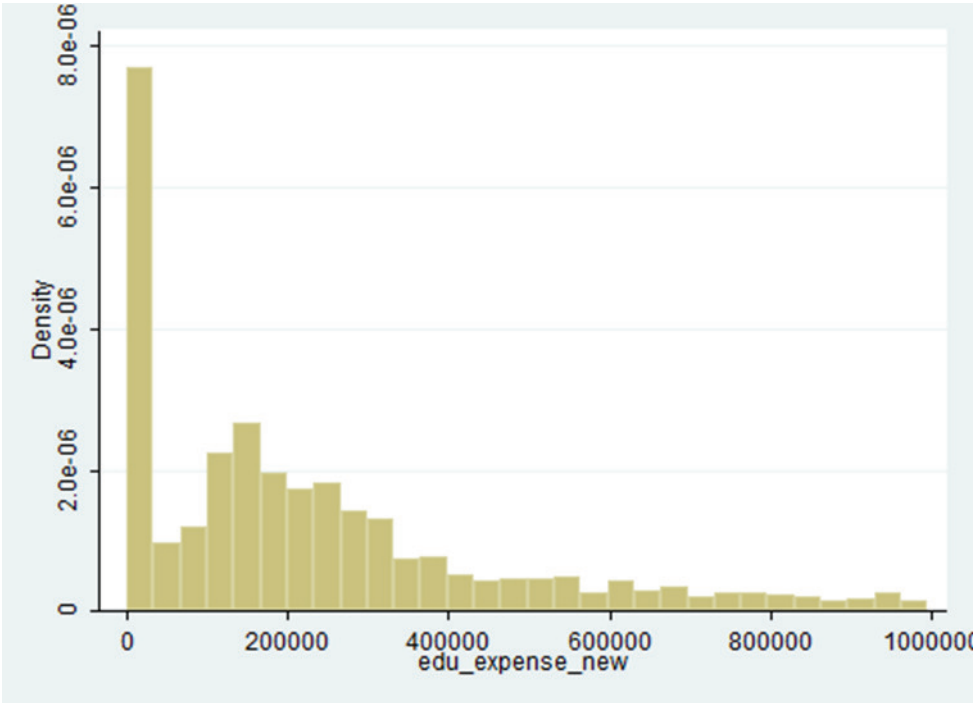
UNESCO. (2009b), "Raising Quality and Strengthening Equity: Why Governance Matters", Paris: Oxford University Press.
Wooldridge, J. M. (2013), "*Introductory Econometrics: A Modern Approach* (5th ed.)", Canada: South-Western CEAGE Learning.

Appendix

Table 3: Summary of Variables

Variables		Description
Log Education Expenditure		Natural logarithm of individual total spending on expenditure.
Age 12-14		=1 if the child aged between 12 and 14, 0 otherwise.
Age 15-17		=1 if the child aged between 15 and 17, 0 otherwise.
Male		=1 if the child is male, 0 otherwise.
Disability		=1 if the child has disabilities, 0 otherwise.
Non Khmer		=1 if the child is not Khmer, 0 otherwise.
Household Head Male		=1 if the household head is male, 0 otherwise.
Father Education		
-	Primary	=1 if the father completed 1-6 years of education, 0 otherwise.
-	Lower Secondary	=1 if the father completed 7-9 years of education, 0 otherwise.
-	Upper and above	=1 if the father completed more than10 years of education, 0 otherwise.
Mother Education		
-	Primary	=1 if the father completed 1-6 years of education, 0 otherwise.
-	Lower Secondary	=1 if the father completed 7-9 years of education, 0 otherwise.
-	Upper and above	=1 if the father completed more than10 years of education, 0 otherwise.
Household Size		Number of member in the household.
Age 0-5 Ratio		Percentage of member aged between 0 and 5.
Age 6-17 Ratio		Percentage of member aged between 6 and 17.
Age 22-55 Ratio		Percentage of member aged between 22 and 55.
log expenditure		Natural logarithm of household expenditure per capita.
Urban Area		=1 if the household located in urban area, 0 otherwise.

Source: Created by the author based on CSES (2012).



Source: Created by the author based on CESE 2012

Figure 1. Histogram of individual spending on education in Cambodia

Table 4. Tobit Coefficient Estimation for Household Expenditure on Education

	Tobit			
VARIABLES	**All**	**Age6-11**	**Age12-14**	**Age15-17**
Individual Characteristics				
Age 12-14	1.023***			
	(0.226)			
Age 15-17	-4.133***			
	(0.239)			
Male	0.072	-0.005	-0.353	0.901
	(0.183)	(0.225)	(0.249)	(0.628)
Disability	-5.456***	-6.637***	-5.415***	-1.503
	(0.903)	(1.150)	(1.098)	(3.176)
Non Khmer	-1.225**	-1.870***	-0.405	-0.025
	(0.515)	(0.660)	(0.659)	(1.743)
Household Characteristics				
Household Head male	-0.091	-0.076	-0.600	-0.215
	(0.319)	(0.387)	(0.429)	(1.186)
Father Education				
- Primary	0.191	0.032	0.163	1.075
	(0.298)	(0.350)	(0.408)	(1.146)
- Lower Secondary	1.118***	0.307	1.271***	3.817***
	(0.337)	(0.409)	(0.452)	(1.241)
- Upper and above	1.108***	-0.043	1.010*	4.862***
	(0.393)	(0.485)	(0.529)	(1.385)
Mother Education				
- Primary	0.869***	0.791***	0.926***	1.269
	(0.235)	(0.284)	(0.321)	(0.838)
- Lower Secondary	1.462***	1.144***	0.895**	2.985***
	(0.330)	(0.409)	(0.454)	(1.103)
- Upper and above	1.470***	1.526***	0.908	2.605*
	(0.463)	(0.583)	(0.615)	(1.532)
Household Size	0.129**	0.142**	0.110	0.135
	(0.057)	(0.072)	(0.080)	(0.197)
Age 0-5 Ratio	-0.022**	-0.019	-0.001	-0.097**
	(0.010)	(0.012)	(0.015)	(0.045)
Age 6-17 Ratio	-0.013*	-0.013	-0.008	-0.021
	(0.008)	(0.010)	(0.010)	(0.023)
Age 22-55 Ratio	-0.012	-0.013	-0.016	0.001
	(0.008)	(0.011)	(0.012)	(0.024)
Log expenditure	2.520***	1.738***	2.026***	5.067***
	(0.228)	(0.286)	(0.310)	(0.754)
Urban Area	0.797***	0.693**	0.793***	1.006
	(0.224)	(0.280)	(0.302)	(0.747)
Constant	-21.515***	-11.435***	-13.757***	-60.707***
	(2.902)	(3.663)	(3.920)	(9.653)
Sigma	5.860***	5.137***	4.018***	9.509***
	(0.077)	(0.091)	(0.095)	(0.307)
Left-censored	914	343	111	460
Observations	4,295	2,142	1,076	1,077
Pseudo R2	0.034	0.015	0.030	0.040

Source: Created by the author based on CSES 2012

Note:
- Standard errors in parentheses
- *** p<0.01, ** p<0.05, * p<0.10
- Base group for father and mother education is "No education"